



## Mid-term Report

Virtual Campus Hub D1.1

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## D1.1 Mid-term Report

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This report represents the deliverable D1.1 of project Virtual Campus Hub. The project runs from October 2011 to September 2013. The report is the core of the project's 1<sup>st</sup> periodic report, which was submitted to the European Commission on November 26, 2012. In addition, this report contains the minutes from the Virtual Campus Hub mid-term meeting September 26-27, 2012 in Torino, Italy.



The project is partially funded by the [European Commission](#) under the [7th Framework Programme](#)

## ***Project objectives, work progress and achievements, project management***

### **Project objectives for the period**

The project objectives, as included in Annex I to the Grant Agreement are:

#### ***Concept and project objective(s)***

The Virtual Campus Hub project will develop and implement the tools and e-learning platforms needed to establish a European and potential world-wide Virtual Campus network primarily for technical universities and business schools.

The Virtual Campus network will use the European e-infrastructure network incl. Géant as the communication backbone. The project will formulate end-user demands for high-quality services in support of a global virtual campus network based on a Virtual Campus Hub concept.

The Virtual Campus Hub will be developed through pilot use of the hub elements with special emphasis on the integration of research, innovation and education in sustainable energy. The Virtual Campus Hub consists of the following components:

- (1) A technical platform that can deliver virtual meeting spaces for lectures, conferences, laboratory and numerical exercises, as well as innovation tools, executive learning modules, self-study, etc. (this reporting period)
- (2) A set of documented best practices for the use of the platform for courses, teaching & learning methods, innovation processes, networking and joint programs, developed through continued complementary on-site activities (next reporting period).
- (3) A growing inventory of staff competence and experience gained from using the Virtual Campus Hub for enhancing quality and scaling-up innovation, education and training activities primarily related to sustainable energy, combined with dissemination and communication of the resulting best practices (next reporting period).

The VC Hub project builds on activities and ideas concerning e-learning and virtual campuses that are currently being pursued by several universities and research organizations in Europe and combines the emerging e-infrastructure potential for high quality virtual communication with many types of audiences.

The project is inspired by

- The Europe 2020 and the SET Plan goals addressing the need to boost and integrate research, education and innovation in the field of sustainable energy.
- The need to scale-up education and training in order to be compatible with the forecasts and predicted shortage of people with required new skills in the energy sector
- The availability of high speed interconnection opportunities for research and education networks and the advances in end-user virtual communications tools

- The objective of the project is to deliver a working concept for a Virtual Campus Hub in a form ready to be implemented at partner universities, research organizations with links to industries, businesses and innovation parks. The result will be published in a format that will allow other organizations to implement the Virtual Campus Hub concept.

The objectives and the corresponding deliverables will include

- 1) Development of a scientific distributed digital framework concept that supports students and teachers in computer based interactive simulations and related datasets describing examples of science applications (this reporting period)
- 2) Building-up of an open community of students, professors, teachers and partners using modern communication and collaboration tools, combined with a strictly moderated quality assurance process (next reporting period).

In addition, the deliverables will include (policy) recommendations for

- 3) The technical infrastructure needed to deliver high-quality services to networks with joint programs in research, innovation, education and training (this reporting period).
- 4) Best practice in organizations/work-flows of combined efforts and joint programming in research, innovation, education and training including the managerial and didactic aspects – in the first instance in activities related to sustainable energy and the SET Plan goals (next reporting period).
- 5) Best practice for making science and engineering available for young students in a way that supports individual learning styles (“blended learning”) and makes a scientific career attractive to the students (next reporting period).

The results of the Virtual Campus Hub project will be presented in reports and manuals, at meetings and conferences as well as by web based video presentations, tutorials and e-conferences/-seminars.

## **Work progress and achievements during the period**

**WP1 – Management of the Consortium** See later section

### **WP2 – E-Learning Tools**

#### **Summary of progress**

This work package includes the following activities:

- Development and test of three remote laboratories related to turbomachinery: remote cascade lab, remote pressure measurement lab, remote flutter lab;
- Development and test of continuous examination tools for automatic correction: *large* pool of multiple answers on “simple” questions and algorithms and database of energy calculation exercises;
- Deployment of the e-learning tools to the VCH environment.

In the first 12 months of the project, the main focus has been on the development and test of the e-Learning tools.

#### *Remote cascade lab*

The remote cascade lab has been realized following a modular design concept, where a fast reconfiguration of the setup has allowed for accommodating the remaining labs (remote pressure measurement lab, remote flutter lab). The facility consists of an aerodynamic wind tunnel where a linear cascade of low pressure turbine blades is assembled as a module and introduced in the test section.

The remote control of the cascade lab has been ensured by developing a web-based GUI (Graphical User Interface) and by granting the users access to monitoring cameras installed in the room.

The remote laboratory exercise has been structured such that users need first to complete an online self-assessment after which they are granted access to the GUI and cameras. The experimental activity is carried out in groups; students collaborate online and can have alternate control of the lab. Measurement data are automatically sent via email for analysis and discussion of results.

The remote cascade lab, along with tutorials and the online self-assessment, has been fully developed (further description is included in deliverable D2.1) and used in March 2012 in the Thermal Turbomachinery Course. Further testing, including online survey and monitoring of the students during the activities, is on-going (Turbomachinery Course, fall term 2012, KTH) and results will be presented in deliverable D3.2 (due end of November 2012).

#### *Remote pressure measurement lab*

The remote pressure measurement lab has been accommodated in the aerodynamic test facility used for the cascade lab, where now a different module – a plate with a series of pressure taps - is positioned in the test section. In this lab, focus is on the investigation of the influence of different pressure tapping on pressure measurements, as well as on performing an aerodynamic probe

calibration using an automatic probe positioning system and an aerodynamic three-hole wedge probe.

A separate GUI has been created for the pressure measurement lab, where common elements (such as the control of the air supply system) have been kept the same to facilitate users already familiar with the remote cascade lab (and vice versa). The monitoring cameras have been as well updated with additional present views focusing on the elements of interest for this lab exercise.

The remote pressure measurement lab has been fully developed (further description is included in deliverable D2.1). First tests have been carried out with researchers at the department, and full-scale test with the students will take place in the Measurement Techniques Course at KTH in late November – early December 2012.

#### *Remote flutter lab*

The remote flutter lab is accommodated in the same aerodynamic test facility as the previous two labs. Here focus is on a cascade of oscillating blades and on the measurement of unsteady aerodynamic blade loading as well as of the oscillatory motion of the blades.

The flutter module, along with the system for the measurement of the unsteady blade loading and motion has been designed. In parallel, preliminary CFD (Computational Fluid Dynamics) calculations of the fluttering cascade have been performed. At the present time, the components for the flutter module are being ordered and manufactured. Final assembly and test is foreseen to be completed in January 2013.

#### *Continuous examination tools: large pool of multiple answers on “simple” questions and algorithms and database of energy calculation exercises for automatic correction*

Continuous examination tools in the form of large pools of multiple answers on “simple” questions (MCQs) and sophisticated calculation exercises for automatic correction have been created and used in various courses related to energy technology at KTH. These include Turbomachinery, Sustainable Power Generation, Renewable Energy Technology, and more. The tools have been presented to the students in various forms and stages of the learning process: as self-assessments during the course as well as part of online intermediate and final exams. The platform used to generate and conduct the automatically corrected exercises, assignments and exams is Bilda, the Learning Management System (LMS) in use at KTH, which offers a range of tools for e-learning and knowledge management.

For the MCQ type questions, focus has mainly been on the development of questions which use JavaScript programming in order to randomly select a specified number of multiple correct and incorrect alternatives from a pool consisting of generally 10 alternatives, of around 5 correct and 5 incorrect. The generation of the MCQs has started from transforming open ended kind of questions to MCQs and then implementing them in Bilda.

For the calculation type exercise, the exercise is programmed such that there is a parallel calculation process by the program where the student's answers will be first considered to be checked against a correct value within a specified tolerance range. This means, if the student follows the correct procedure to arrive at a certain value which might even be a wrong value (numerically), the program gives points for that particular answer based on the fact that the student used correct procedure and equations. This method is named as “Twin-Tracking”.

The development phase of the continuous examination tools in the form of MCQs and calculation exercises can be considered as completed. Extensive test has also been performed in various courses at KTH.

## Significant Results

### Remote Labs

Figure 2 shows the aerodynamic test facility built for hosting the three remote laboratories as well as a view from the monitoring camera installed in the room. Figure 3 shows the GUI for the remote cascade lab and the GUI for the remote pressure measurement lab: common elements are kept similar, importance is given to real-time plot of the experimental data, and resolution of the GUI is such it fits properly in laptops and tablets.



Figure 1: Aerodynamic test facility (left) and camera view on the remote cascade lab module (right).

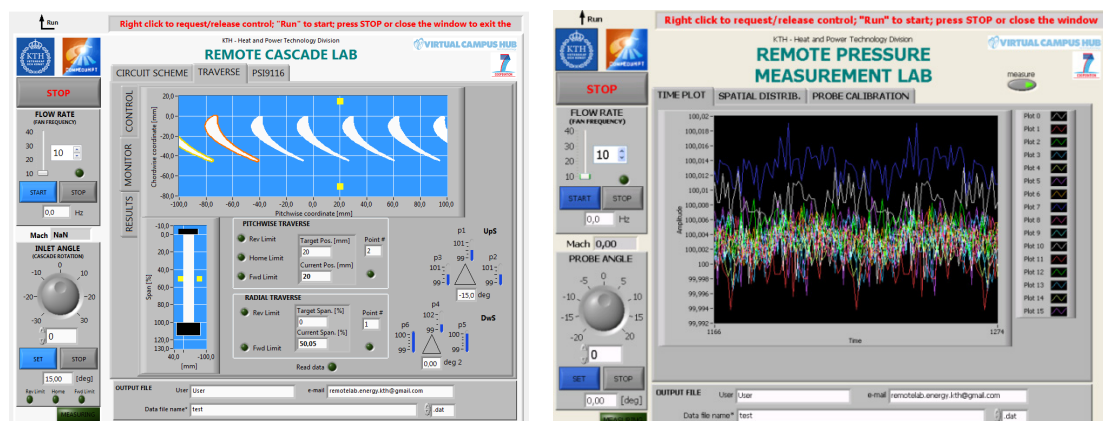


Figure 2: GUI of the remote cascade lab (left) and of the remote pressure measurement lab (right).

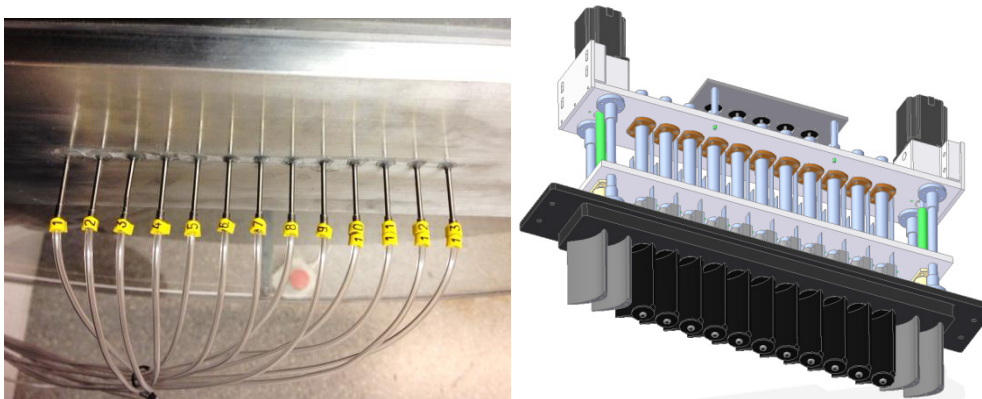


Figure 3: pressure measurement lab module (left) and CAD model of the flutter lab module (right).

Figure 4 shows the plate with pressure taps realized for the pressure measurement lab as well as the CAD model of the flutter lab with oscillating blades and instrumentation for the measurements.

The remote labs developed have shown good reliability during test and operation, both from a hardware as well as software perspective. Students have shown appreciation for the remote operation of the labs and found them useful to achieve the intended learning outcomes; more detailed results will be presented in D3.2.

A relevant limitation in the remote operation of the labs is currently represented by the software used to publish the GUI on the web which requires the user to download and install a run-time engine and to use a specific operating systems (Windows) and web browser (Internet Explorer). Improvements need to be done also for authentication and authorization, being the GUI not completely integrated with the LMS where the self-assessment is made available to the students.

#### *Continuous examination tools*

From the experience gained through conducting online exams and home assignments, a number of benefits and drawbacks of the computer-based automatically corrected assignments, exercises and exams can be identified when comparing them to paper-based ones. Among the benefits, the first and most relevant is the saving in time and effort spent on correcting the examinations and/or assignments; the possibility to provide with instant correction and feedback to the students; the equitable evaluation process; the possibility to facilitate distance-based learning by conducting exams on remote basis and monitoring each progress by students during the test; the possibility to cover a broader spectrum of the course content. Among the drawbacks, the fact that questions in automatically corrected exams and exercises are themselves on an easier level to the students compared to that of the open ended type questions; that it is harder to formulate specific questions with narrow and specialized content and at the same time maintaining the multiple alternatives format; that the kind of automatic correction exercises that provides the students with sub-tasks is somehow giving them a hint on the procedure.

Though, the online exams are indubitably much more effective and efficient in the exam correction process, several challenging issues still remain critical. Due to the increasing amount of self-assessments, control tests, quizzes and examinations related to particularly M.Sc. study programs, the interest in conducting automatically corrected tests and online exams more effectively will stay on the rise.



## Deviations from Annex I

### *Remote Laboratories*

The remote labs have been developed in due time with the exception of the remote flutter lab. As a consequence it is proposed that the corresponding milestone is modified as follows:

<b>Milestone number</b>	<b>Milestone name</b>	<b>Lead beneficiary number</b>	<b>Delivery date</b>	<b>Comments</b>
MS12	Lab exercises developed	2	16	Ready for testing. Original delivery date: 14

### **Use of Resources**

Resources in WP2 have been used as planned for the work performed during this reporting period. See the financial statements and the summary financial report for an overview of the use of resources for the reporting period.

### **Corrective Actions**

No corrective action to be reported.

## WP3: e-Learning Programs and Courses

### Work package objectives (from Annex 1)

Selection, implementation, and evaluation of the Virtual Campus Hub elements in ongoing and new sustainable energy educational programs at Master, Ph.D. levels, and in post-educational training. The evaluation will focus on quality (interdisciplinarity, cross-fertilization, mobilization) and scalability, as well as efficiency and effectiveness.

### Progress towards objectives and details for each task

WP3 has three tasks and the work has progressed as scheduled in Annex 1 for the reporting period. Task 3.1 is completed, task 3.2 is in progress, and task 3.3 will start in the next reporting period. Achievements in relation to the tasks are summarised in the following.

*T3.1: Survey and selection of ongoing and planned educational programs at each of the partners in sustainable energy on Master, Ph.D. levels, and post-educational training, with identification and selection of suitable test cases for implementation of the VCH elements tuned to joint educational programs. Complete month 4.*

A survey form was prepared by DTU and distributed to the partners in January 2012. The form was returned with information about ongoing and planned educational programs in renewable energy, including a rating according to four criteria: cross-fertilisation between learning and innovation, interdisciplinarity, mobility, and scalability. Based on these ratings, three programs were selected as suitable test cases:

- MJ2430 Thermal Turbomachinery course at KTH – for implementation of remote laboratory exercises
- SELECT master program at KTH, Polito, and TU/e – SELECT students will use VCH elements for real life case study
- WAsP wind energy course at DTU – will be offered to students at all partners and to the wind energy industry

*T3.2: Preparation and implementation of VCH elements as test cases in existing educational programs at the partners with combinations of physical and virtual sessions. The tests are chosen to fit into future collaborative educational programs. KTH will lead test from WP2, DTU will lead test to be fitted in Master program related to offshore wind; Polito will lead test related to WP4; TU/e will lead the technology aspects of the tests. All partners will participate in all of the tests albeit at different levels. Complete month 16.*

#### *Plan for testing of VCH elements:*

A plan has been setup for testing of the VCH elements, or functionalities. The testing is scheduled such that the deliverables of WP3 are fulfilled in due time (see the diagram below). Internal tests of the different elements are currently in progress at the partners. The internal tests will be followed by external tests in early 2013, where all partners will be involved in test cases at the other partners.

Development of the VCH technology and portal will take place in parallel with the development and

testing of VCH elements. The VCH elements will gradually be connected to the VCH environment during year two of the project and ultimately, the testing will make use of this environment. This means that test persons can access the VCH elements using the login information from their local institution and group management will be handled centrally.

*Plan for testing of VCH elements with indication of WP3 deliverables.*

VCH functionality	Partner	2012					2013								
		Aug 11	Sep 12	Oct 13	Nov 14	Dec 15	Jan 16	Feb 17	Mar 18	Apr 19	May 20	Jun 21	Jul 22	Aug 23	Sep 24
Remote lab exercises and examination tools	KTH	D3.2													
WAsP wind energy course	DTU														D3.4
e-Link functionalities	Polito														
Online collaboration tool	TU/e														
Development of the VCH technology and portal	TU/e	D3.1													

Internal testing
  External testing
  Testing in the VCH environment

*Test of remote lab exercises and examination tools*

Remote laboratory exercises and examination tools are described under WP and also in *D2.1 Interim report on pedagogical improvement*. An online evaluation form has been prepared for the testing of remote laboratory exercises. The remote cascade lab has been tested internally at KTH by students enrolled in the Thermal Turbomachinery and Airbreathing Propulsion II Courses in the Spring term of 2012. Online examination tools have been introduced in several courses at KTH including Turbomachinery, Sustainable Power Generation, Renewable Energy Technology, Rocket Propulsion and Combustion Theory.

*Test of WAsP wind energy course*

As part of WP3, the course 'WAsP' (Wind Atlas Analysis and Application Programme) by DTU has been transformed from a physical to an online course. WAsP is the industry standard tool for wind resource assessment and the course is mainly directed towards the wind energy industry and to Ph.D. students. DTU is currently investigating how the course can become a master course with ECTS credits and how it is best offered to students at the master level e.g. as part of mobility programs.

The online WAsP course has been developed by scientists at DTU together with an external E-learning consultant (not funded through the project) who has helped the scientists decide on the pedagogical concept and technical solutions for the course (e.g. the choice of learning management system to hold the course). A series of workshops have been held during the reporting period to define the course structure and review the status of the course development. Between workshops the scientists have worked on the course content. Evaluation forms have been developed by DTU's Learning Lab for collection of student and teacher feedback.

The online WAsP course is designed to run over 10 weeks with a total estimated workload of 40 hours for the students. Each week, students complete one course module with an estimated workload of 3-4 hours. The modules contain a number of E-lessons where students listen to recorded presentations, perform hands-on exercises, and discuss the related issues online. To facilitate the group discussions, the course is run in a nearly synchronised manner such that all

participants and teachers work on the same module during the same week. Students are divided into groups of 10 during the course in order to create a 'safe' learning environment where information is shared openly. The course can be run with several groups of students simultaneously and is therefore very scalable.

The online WAsP course was fully developed and ready to run by the end of September 2012 and it has contributed to *D3.1 Prototype implementation of e-learning tools and incubator processes*. The first test of the course started on October 22 with 12 participants from DTU (scientists, students at Ph.D. and master level, visiting scientists) who follow the course in a compressed form with two modules per week during five weeks. Evaluation forms are collected after each course module and show positive feedback so far. The outcome of the internal test run, which ends on November 26, 2012, will be described further in *D3.2 Trial implementation and test of two e-Learning tools*.

The WAsP course can be viewed at <https://windenergy.itslearning.com/index.aspx> with user name 'guest' and password 'Online2306'.

#### *Test of E-link functionalities*

E-link functionalities are described under WP4 and also in *D4.1 Interim e-Link Evaluation Report*. Testing of E-link functionalities will take place during the second reporting period.

#### *Test of online collaboration tool*

The online collaboration tool is described in *D3.1 Prototype implementation of e-learning tools and incubator processes*. Testing of the online collaboration tool will take place during the second reporting period. The collaboration tool will be tested in connection with a bachelor course on Entrepreneurship, where about 70 students work in project groups of 4-5 on an industry assignment for the period November 2012-February 2013. Each project group has a client from industry (the one that commissioned the assignment), a supervisor from industry and an internal supervisor (at TU/e). Project groups need to consult their client and supervisors regularly for feedback and progress reports. The test will show to what extent the collaboration tool makes the interaction between student groups and the different kinds of supervisors easier and more flexible. Pilots with a comparable, but international setting will be used to test the collaboration tool in connection with the virtual campus hub technology.

*T3.3 Assessment and evaluation of the test cases; DTU will lead with contributions from the responsible parties for each of the tests from the other partners. Complete month 20.*

To be completed during the second reporting period.

### **Significant results**

Results achieved in WP3 so far include:

- Three educational programs selected as suitable test cases
- Online course in wind energy developed and ready to run (WAsP course by DTU)
- Plan published for testing of VCH elements developed in WP2, WP3, WP4 and WP5
- Evaluation forms developed for testing of elements from WP2 and WP3

**Use of resources**

The use of resources in WP3 has followed the allocation in Annex I. A total of 12 scientists from DTU Wind Energy and two persons from DTU Learning Lab have contributed to the development and test run of the WAsP online course. See the financial statements and the summary financial report for an overview of the use of resources for the reporting period.

## **WP4: e-Link Innovation for Decision Makers**

### **Work package objectives (from Annex 1)**

The objective of this work package is to integrate, in the e-learning and data sharing functions provided by the Virtual Campus Hub, new interaction modalities that allow involvement and information exchange with innovative SMEs.

### **Progress towards objectives and details for each task**

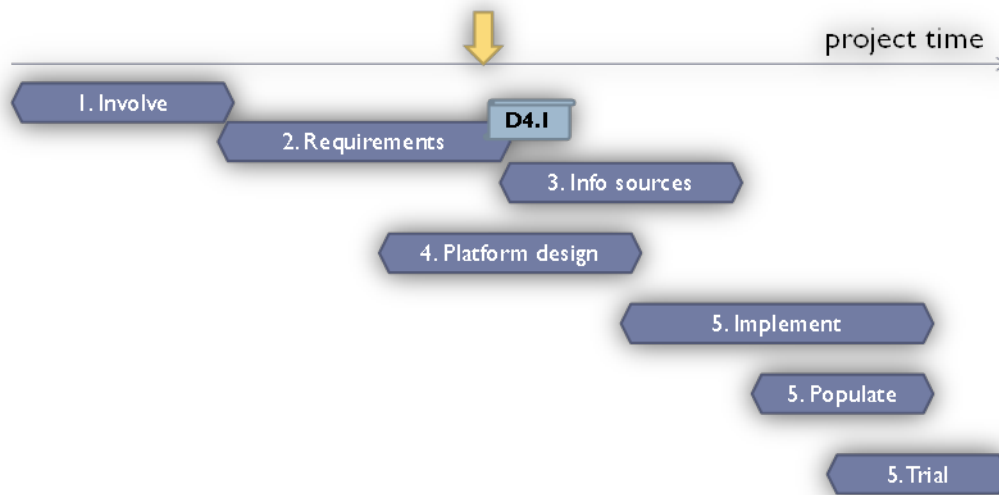
WP4 has three tasks. Task 4.1 is completed; task 4.2 and task 4.3 are in progress. Milestones MS6 and MS7 had a delay (from month 6 to month 12), but were fulfilled within the reporting period and the delay had no consequence on other project's activities.

The adopted methodology for WP4 is summarized in the following steps:

- **Identify requirements coming from Entrepreneurs.** To identify, with the involvement of the experts, the specific requirements for both contents and tools to be analyzed during the project (and to be tested in field trials). Such selection should take into account specific priorities (such as the criticality of the process for current SMEs, the effectiveness of possible on-line implementations, the relevance to the Energy sector, the importance towards the success of the enterprise, the needs expressed by the entrepreneurs, etc) and constraints (mainly represented by project timing and budget). *Status: completed.*
- **Identify available information sources.** To identify the information sources of interest for the target enterprises. The VCH project acknowledges that such information is very often available (albeit sometimes in non-free forms), but that a clear and easy to research updated list of resources should be identified and evaluated. Resources will range from informational to educational, from legislative/normative to technical, from detailed/specific to general, from managerial to project-oriented. *Status: completed.*
- **Design an Innovation platform.** To analyze the identified requirements and, with a top-down design methodology, to organize them as an architecture of a possible on-line platform offering services to innovative start-ups. This phase must be highly comprehensive and open-ended, and should consider “all” needed functions and contents in a general blueprint. In the next phases, only a subset of such functionalities will be carried over and experimented. The designed architecture will be compatible with the federated architecture proposed in the VCH platform, and will avoid duplicating the effort already existing in the “Virtual Incubator” work package of the project Explore VC. The innovation functionalities analyzed in the previous phase should address a wide range of use cases. Some of these use cases will be more interesting to evaluate in the VCH project, because they might bring higher innovation potential. Other use cases, deemed to be less innovative and/or more straightforward, will be left for successive developments. In this step, we will select most innovative / most promising functionalities, and we will implement them, as a subset of the complete platform. Such services will be populated with real data and will be available for trials within the project partners and with selected incubators and start-ups. *Status: ongoing.*
- **Dissemination and exploitation.** To host the experimental trials of the developed functionalities. The trials will involve initially the project partners, and the incubator

structures linked with the participating universities. Such incubators will be involved as early users of the system, which if successful will be extended after the end of the project. Initial contacts with the incubators have shown that some functionality is of real interest and, if implemented, they are willing to adopt and support them in the long term. Therefore, according to social marketing approaches, the trial phase (free to early users) will also work as dissemination of the project results and of the VCH platform. *Status: planned.*

With reference with this methodology, the following picture shows the current status of WP4:



Specific achievements in relation to the tasks are summarised in the following.

*T4.1: Analysis of existing virtual material for decision makers and innovation on energy issues, and requirement analysis.*

The goal of this task is to identify learning contents, information material, interesting information sources (both free and paid) that are useful to the pre-incubation phase of energy related start-ups. These contents should cover both technical information, highly specific to the energy sector, and managerial information, including specific business models adopted in the energy sector.

For the first sub-goal of the task, i.e. to collect and organize available digital resources, we followed a two-step methodology:

- First, we proposed a taxonomy of the resources to be collected (reported in deliverable D4.1)
- Second, we proposed a format for collecting data, that lists the categories (meta-data) adopted in data collection and classification (reported in deliverable D4.1)

Politecnico di Torino distributed the suggested format to the partners in July 2012, and collected relevant sources of information as a result of the survey. The list of content is available in deliverable 4.1.

The collected information shows that there is a wide interest in the theme of renewable energy, and confirmed our assumption that a huge variety of information is already available to the target

enterprises, and therefore the project should not concentrate in developing new material.

It should, on the contrary, concentrate on designing and developing innovative services to help target enterprises to find relevant and “ad hoc” information. The services should catalogue, comment, give access and create relationships among existing information, representing a powerful tool for discovering and exchanging knowledge.

For the second sub-goal of the task, i.e. identify requirements for innovative on-line functionalities, services and contents that are relevant for innovative SMEs and start-ups in the energy sector, we involved the I3P company (formally: I3P - Società per la gestione dell'Incubatore di Imprese Innovative del Politecnico di Torino - S.c.p.a.).

The main activity of this sub-task was the identification of innovative ICT services and contents of interest for small and medium enterprises in the energy sector, and was fulfilled through contacts with local enterprises, by involving the project partners, and through the involvement of other (local and European) projects in which I3P is involved.

WP4 in project VCH addresses topics that are in strong relationships with other projects active in the context of the “Explore Energy” broad initiative. In particular, the project Explore VC described the definition and creation of a “Virtual Incubator” for on-line handling of the selection and incubation phases of new enterprises. The approach taken in VCH acknowledges the advancements and the developments already put forward by the Explore VC project, and aims at complementary functionalities, that contribute more to the technical side of the entrepreneurial activity, and are more aimed at the **pre-incubation phase** (preparation of the business plan and identification of the main innovation products or services). In particular, VCH will bring functionalities related with e-Learning, benchmarking, market information, technical resources, etc.

The result of this sub-task is a list of the most important requirements from a start-up point of view. The list, together with the methodology and process, is included in deliverable D4.1.

#### *T4.2: New Virtual Campus Hub elements for decision makers on energy issues.*

The goal of this task is to identify and design the on-line tools and functionalities to be adopted by the managerial staff of the innovative companies and by the related incubation and/or funding agencies. A subset of such functionalities will be evaluated with field trials. This is an on-going task. Activities done so far are reported in the following.

We analyzed the list of requirements from SMEs (resulting from task T4.1) according to different criteria: criticality to business success, ease of transfer into an on-line service, cost savings for an on-line implementation. The initial suggestions for information sources and on-line services that an innovation platform should provide to its customers include (explanations are in deliverable D4.1):

- Patent databases access
- Market and Industry Databases
- Forums and other social networks tools
- Value network builders or value network maps
- Osterwalder's canvas model
- Smart lists of Web links



After that, we defined the technical infrastructure for the VCH services, both for the functional aspect and the software structure (see deliverable D4.1).

Considering the chosen architecture, we then filtered the list of required according to two feasibility criteria: effort required, according to the project timing, and availability of necessary information. The result, included in deliverable D4.1, is the prioritization of the functionalities.

*This task is to be completed during the second reporting period.*

#### *T4.3 New Virtual Campus Hub elements for start-ups and innovative SMEs.*

The goal of this task is to identify and design the on-line tools and functionalities to be adopted by the technical staff of the innovative companies. A subset of such functionalities will be evaluated with field trials.

This task is strictly related to task 4.2, sharing the methodology but customizing the selected functionalities for a different user target. For details of the activities done so far, please refer to task 4.2.

*This task is to be completed during the second reporting period.*

### **Significant results**

Results achieved in WP4 so far include:

- A list of existing virtual material for decision makers and innovation on energy issues has been created, analysed through a proposed taxonomy
- A list of major requirements of potential entrepreneurs on energy issues
- A list of information sources and on-line services that an innovation platform should provide to its customers.
- The general architecture of the VCH platform, both for the functional aspects and the software structure.
- The prioritization of the previously listed on-line services taking into account their added value and the development effort.
- Milestones MS6, MS7 and MS9 and deliverable D4.1 have been fulfilled.

### **Deviations from Annex I**

Deliverable D4.1 has been submitted with a 2-months delay. This was mainly due to the initial difficulties in finding a fruitful synergy with the Explore VC project, whose objectives partially overlap with VCH's ones, and on the need to fill a competence gap in the business field. This delay implied an internal rescheduling of WP4 activities, but did not have impact on other work packages or other partners' activities. A rescheduling is proposed for deliverable D3.3 and milestone MS14 from month 14 to month 18. The delay of WP4 is expected to become reabsorbed by month 18.

### **Use of resources**

Used resources include:

- Personnel costs (1 full professor, 2 assistant professors, 1 senior researcher, 1 administrative assistant).

- Travel costs: participation to the kick-off meeting in Stockholm (2 people) and to the VAMP workshop in Utrecht (2 people).
- Other direct costs: organization of the mid-term project meeting in Torino.

I3P consultancy costs have not been charged on the VCH project budget.

See the financial statements and the summary financial report for an overview of the use of resources for the reporting period.

## WP5: Virtual Campus Hub Technology

### Work package objectives (from Annex 1)

Survey, procurement, implementation, testing and evaluation of the e-Infrastructure components needed to establish a Virtual Campus Hub linked to the European e-science infrastructure.

### Progress towards objectives and details for each task

WP5 has three tasks and the work has largely progressed as scheduled in Annex 1 for the reporting period. Task 5.1 (preliminary technology survey report) is completed, but took longer than planned. One reason was that more time was needed to acquire sufficient knowledge on technical developments related to the Géant infrastructure. Another reason was that the concept proposal for the VCH needed to be consulted with partners and it took more time than expected to find the people with the right expertise on these matters at the different partner institutions. Task 5.2 is completed and task 5.3 is in progress. Achievements in relation to the tasks are summarised in the following.

*T5.1: Survey of available technology and design of the technical concept for a Virtual Campus Hub.*

- a) Requirement inventory: determine exactly what needs to be done and which requirements imposed by the contents of the other WP's have to be met.*
- b) Concept proposal for the VC Hub.*

*Complete month 3.*

A survey of available technology has been done, consisting of two parts:

1. Existing Géant infrastructure and ongoing developments.
2. Inventory of technology available and status of connections to Géant infrastructure at partner institutions.

See deliverable 5.1 (*Preliminary Technology Survey report*) for more details, as well as deliverable 3.1 (*Prototype implementation of e-learning tools and incubator processes*), which has been delivered recently and therefore describes the most recent status on these points. T5.1 has been carried out in close collaboration with partners and with Surfnets, the Dutch NREN. The inventory has been translated into a concept proposal, which was consulted with partners.

*T5.2: VC Hub technical concept with specifications for the VC Hub inventory/demonstrator; coordination of the implementation of the VC Hub demonstrator for the technical solutions at each of the partners.*

- a) Architectural design of the VC Hub*
- b) Technical concept preparation, including requirements*

*Complete month 6.*

The concept proposal for a VCH (T5.1) has been worked out in an architectural design and a technical concept, which has subsequently been consulted with partners and with all NREN federations involved (SurfFederation, Wayf, Swamid and IDEM). Architectural design and technical concept have been accepted by all partners and federations involved and therefore are the basis

for the work currently carried out for T5.3. See deliverable 5.2 (*Technical concept and recommendations for the specifications of the VC Hub Inventory & Demonstrator*), as well as deliverable 3.1 (*Prototype implementation of e-learning tools and incubator processes*), which has been delivered recently and therefore describes the most recent status on translating design and concept into a demo implementation.

*T5.3 Testing and evaluation of the demonstrator used in WP3 and WP4. Recommendations for operation of virtual facilities such as conference room, lecture halls, coffee shop and meeting place.*

- a) *Implementation of test set-up at the universities involved*
- b) *Implementation of pilot VC Hub elements of WPs 2, 3 and 4.*
- c) *Testing of Concept*
- d) *Finalise design of VC Hub*
- e) *Monitoring roll-out VC Hub design at partner universities*

*Complete month 18.*

To be completed during the second reporting period. In this reporting period a start has been made with the finalization of the functional and technical design, as well as with the implementation of the different VCH elements. This has involved the following actions, which are still going on:

1. Selecting applications to be used at partner universities to deliver the VCH elements of WPs 2, 3 and 4 (access to learning materials, collaboration environment, virtual incubator, demo portal)
2. Start working out the technical connections of these applications to the Géant infrastructure (federated authentication, group management)
3. Decide on a way to interconnect the different NREN federations involved. The inter-federation eduGAIN will be used for this.
4. Start working out a detailed functional and technical design for the VCH and its elements. This is done to ensure that the technical activities carried out by all partners and federations involved remain attuned to each other.

A more detailed discussion on the above actions including their present status can be found in deliverable 3.1 (*Prototype implementation of e-learning tools and incubator processes*).

The technical requirements for partners and federations have been worked out during a number of online and physical project meetings, notably:

1. (*June 20, 2012*) Online meeting with technicians and project responsible from all partners and technical experts from Surfnets.
2. (*September 6-7, 2012*) Participation in TERENA VAMP workshop on *Virtual Organization Architecture and Middleware Planning*. This included a project meeting with members of all partners and all NREN federations involved as well as an internal project meeting with members of all partners.
3. (*September 27, 2012*) Online meeting with all NREN federations involved during the VCH mid-term meeting in Turin, Italy.

*Challenges for the coming months (technical, organizational, planning)*

A number of challenges stand out for the coming months with respect to the design and the

## implementation of the virtual campus hub technology:

1. The application that is used by DTU to deliver the online course on wind energy (itslearning) is a cloud service provided by UNI-C (Denmark) and delivered through an installation in Norway (provided by itslearning, the company that owns the application). This means that the NREN federation from Norway (FEIDE) needs to be added to the list of federations involved in this project. In addition, realizing the connection of this application to the Géant infrastructure is dependent on the cooperation of UNI-C and of itslearning, the Norwegian company that provided the installation. DTU and TU/e will keep in close contact with UNI-C, FEIDE and itslearning to counter this challenge.
2. While implementation of federated authentication is by now considered relatively straightforward, realizing external group management for different applications is quite new to most NREN federations, partner universities and external service providers (e.g. itslearning in the case of DTU). There is also no standardized mechanism across federations to realize this. This means that we need to use one federation's solution for this (i.c. Surfconext from SurfFederatie/Surfnet, as Surfnet seems to be ahead of other federations in dealing with this issue of group management), which may make some service providers wary to invest in making their application work with the group management solution from Surfconext. TU/e and other partners will counter this challenge by stressing the importance of external group management for cross institutional and cross border collaboration and by involving Surfnet as much as possible to help service providers answer technical questions and help to solve possible technical problems.
3. While almost all pilots involve partners from industry, the Géant infrastructure is in most countries not open to partners from industry. This means there are political and legal barriers to realize the virtual campus hub concept in full, barriers which cannot be overcome by this project. To counter this challenge, partners from industry will be involved through workarounds, mostly by handing out guest accounts (by a partner university or a federation) or to enable (limited) access through a so-called OpenSocial account (e.g. from Google or Facebook). For the project this will suffice, for involving industry more closely a structural solution (political and legal) needs to be found.
4. The VCH concept assumes that all partners are connected to their national NREN federation and that all NREN federations involved are part of eduGAIN. However, PoliTo is not connected to IDEM yet – a timeline for this to happen has not been set yet – and WAYF is not part of eduGAIN yet – a timeline for this to happen has been set for the beginning of 2013. TU/e will try to counter this challenge by closely monitoring and encouraging progress in this matter.
5. For most partner universities, the technological activities needed and the technological knowledge related to this are quite new to most of the IT staff involved. This means that most partner universities will need to hire external IT experts to do some or most of the implementation work. This could imply that the budget needed for external assistance is higher than expected. All partners will counter this challenge by making a detailed estimate of their expected costs for external assistance, once the technological solutions for their VCH elements are worked out enough to do this.
6. At this moment, it is difficult to propose a detailed planning for the realization of the VCH and its elements in the coming months until April 2013, as different partners are in different phases of realizing the VCH elements and there are still a number of technical uncertainties that must be investigated (see above and the status overview in deliverable 3.1). To counter this challenge, TU/e will be closely monitoring progress on the realization of the VCH elements in the coming months. End of January 2013 decisions on the following will need to be taken for every VCH element:
  - a. Is there sufficient progress in realizing the element as planned or will a workaround be needed?
  - b. If there is delay: Will delay of realizing the VCH element in time hamper the realization of other hub elements or not. If not, a workaround may not be necessary, but testing the element in connection with the VCH may be delayed in that case. As long as the full test can be done before the end of the project, this may not be a problem.
  - c. If there are other barriers to realizing the VCH element as planned: Which parts of the VCH element can be realized according to plan and for which ones a workaround needs to be found.

## **Significant results**

Results achieved in WP5 so far include:

- A concept for the virtual campus hub technology that has been accepted by all partners and NREN federations involved. The concept is closely aligned with current developments in the Géant infrastructure and services. In addition, it clearly identifies gaps in the current Géant infrastructure that need to be overcome in order to support the further integration of education, research and innovation.
- Close collaboration between the partner universities and the NREN federations involved.
- A clear focus on which functionalities will be dealt with in this project and which ones will be left out. See deliverable 3.1 for more details.
- A clear list of activities for partners and NREN federations involved to realize the VCH and its elements. See deliverable 3.1 for more details.

## **Use of resources**

See the financial statements and the summary financial report for an overview of the use of resources for the reporting period.

## WP6: Dissemination and exploitation

### Work package objectives (from Annex 1)

Dissemination and exploitation of the Virtual Campus Hub results to ensure their wider use within the European Research Area and beyond.

### Progress towards objectives and details for each task

WP6 has four tasks and the activities have progressed as scheduled in Annex 1 for the reporting period. Task 6.1 is completed and the tasks 6.2, 6.3, and 6.4 are in progress. Achievements in relation to the tasks are summarised in the following.

*T6.1 Develop a strategy for the dissemination of results, the establishment of strong know-how in and between partners on interactive and multimedia learning objects, and the commercial exploitation of the final results. Complete Month 6.*

The dissemination and exploitation of VCH is described in the report *D6.1 Dissemination strategy paper - preliminary version*, which is publicly available at the project web site. The dissemination and exploitation strategy was updated at the project's mid-term meeting as described in the meeting minutes.

*T6.2 Create and maintain a Virtual Campus Hub web site in order to market results and processes to:*

- (1) Improve the general knowledge on e-learning, use of virtual classroom, laboratories, and conference tools in order to create a strong European e-learning community, and to*
- (2) Attract and inform potential industry customers and users and stimulate their interest in the project results in order to prepare for their exploitation and commercial use.*

The web site for Virtual Campus Hub is at [www.virtualcampushub.eu](http://www.virtualcampushub.eu). The project web site was initially created as a sub-site under [www.exploreenergy.eu](http://www.exploreenergy.eu) at the project start-up and a project logo was created for VCH in line with other projects under the Explore Energy network. In August 2012, the web site was moved to an independent site hosted by DTU, upon request from the Project Officer. The URL remains unchanged. The project web site contains a brief description of VCH with links to a more comprehensive project summary and a Power Point presentation of VCH. Publicly available deliverables can be downloaded from the web site – so far *D6.1 Dissemination strategy paper - preliminary version* is available. DTU is maintaining the web site continuously.

*T6.3 Organize workshops, physical and virtual meetings, and a final conference to share the technical results of the project with the academic community and the industrial community (alliance partners and beyond) as well as a wider community of users, decision makers, students, etc, and to establish liaison with key players in the academic and business communities to create the necessary interest for the deployment of the results. Key academic players will primarily be alliance partners in SEEIT, KIC InnoEnergy, and their industry contacts.*

The following workshops and meetings have been attended by partners in VCH in connection with external dissemination of the project and its results:

- Terena REFEDS workshop, September 5, 2012 (presentation by DTU)
- Terena VAMP workshop, September 6-7, 2012 (all partners present, presentation by TU/e)
- Surfnets Relation Days, October 4, 2012 (presentation by TU/e)
- SEEIT workshop, October 25, 2012 (presentation by DTU)

Dissemination activities during the first project year have mainly focused on the national federations and other E-infrastructure bodies, as their collaboration is crucial for the achievement of the project objectives. Likewise, the E-infrastructure bodies are interested in VCH as a use case which demonstrates the need for federated authentication in connection with research, education, and innovation. The federations are key stakeholders in VCH in the first project year.

Two virtual events and one physical meeting have been organised where the project partners and their national federations exchanged ideas about the VCH concept and how to realize it:

- Online meeting June 20, 2012, all partners and Surfnets.
- VCH meeting in connection with Terena VAMP workshop, September 7, 2012, all partners and their federations (Surfnets, WAYF, SWAMID, IDEM).
- Online meeting September 27, 2012, all partners and their federations (Surfnets, WAYF, SWAMID, IDEM).

In the second project year, development and testing of VCH elements is much more advanced and the dissemination can thus be directed towards a broader community, as stated in the task description.

*T6.4 Organize contributions and edit project reports and the report on the Virtual Campus concept. Complete month 24.*

DTU has organised contributions to conferences and project reports and helped with the final checks (e.g. made sure FP7 logo and project logos were added) and submission of all project reports during year one.

## **Significant results**

Results achieved in WP6 so far include:

- Dissemination and exploitation strategy defined and report submitted
- Project logo created
- Project web site set up and maintained continuously
- VCH project presented at four workshops
- Three meetings held with national federations (key stakeholders in year one)

## **Use of resources**

The use of resources is as planned in Annex I. The majority of resources allocated to dissemination will be spent during the second project year. See the financial statements and the summary financial report for an overview of the use of resources for the reporting period.



## Project management during the period

### Consortium management tasks and achievements

The consortium management has fulfilled the tasks listed in Articles II.2.3 and Article II.16.5 of the Grant Agreement. Specifically, the following tasks have been carried out:

- The first financial contribution from the Union has been received and pre-payments have been made to the other beneficiaries.
- All records and financial accounts connected to the project have been kept and will be sent to the Commission upon request. This includes information of the distribution of the financial contribution.
- The compliance by beneficiaries with their obligations has been monitored. For example, reminders have been sent out to beneficiaries in advance of every delivery date and, if necessary, when deliverables were delayed.
- The consortium agreement has been maintained through submission of an amendment request on July 25, 2012 (details are given below).
- Financial statements have been collected and quality checked for the first periodic review.

### Problems which have occurred and how they were solved or envisaged solutions

No major problems have occurred during the reporting period.

### Changes in the consortium

An amendment request was submitted to the Commission on July 25, 2012 and accepted with signature on August 30, 2012. The amendment contains the following changes:

- Modification of Annex I – Description of Work (project participant names updated)
- Change of coordinators name and addresses (to Karen Hyllested Thielsen at DTU Wind Energy)
- New legal representatives (for DTU and Polito)

### List of project meetings, dates and venues

Physical and virtual project meetings have been organised by the coordinator on a regular basis. Agendas and minutes for all the meetings are available through the internal MS SharePoint site of the project. The meeting type, date, and venue for project meetings are given below:

Meeting type	Date(s)	Venue
Project kick-off meeting	24/10/2011	KTH, Stockholm, Sweden
Online meeting for WP leaders	10/01/2012	Adobe Connect online meeting
Online meeting for WP leaders	06/02/2012	Adobe Connect online meeting
Online meeting for WP leaders	20/03/2012	Adobe Connect online meeting
Online meeting for WP leaders	02/05/2012	Adobe Connect online meeting
Online meeting for WP leaders	15/08/2012	Adobe Connect online meeting
Project meeting in connection with Terena VAMP workshop	07/09/2012	Surfnet, Utrecht, Netherlands
Project mid-term meeting	26-27/09/2012	Polito, Torino, Italy

### **Project planning and status**

The current project status is that all milestones and deliverables for the reporting period have been fulfilled – this is our basis for ticking the box “The project has fully achieved its objectives and technical goals for the period” in the declaration of the scientific representative.

Several milestones and deliverables are due by the end of month 14 (November 2012). KTH has proposed that the milestone MS12 is shifted to month 16. Polito has requested that the milestone MS14 and the deliverable D3.3 are both shifted to month 18.

### **Impact of possible deviations from the planned milestones and deliverables**

The potential deviations from the planned milestones and deliverables in WP2 and WP4 during the second project year are not foreseen to have any impact on the work in the other WPs. In particular, the partners responsible for WP2 and WP4 are aware that delays here should not be allowed to delay the work in WP5 where the functionalities will be connected to the VCH environment.

### **Changes to the legal status of any of the beneficiaries**

No changes have occurred.

### **Development of the Project website**

The external project web site is at [www.virtualcampushub.eu](http://www.virtualcampushub.eu). The site was originally hosted by KTH under the network Explore Energy, as described in *D6.2 Virtual Campus Hub web site*. In August 2012, the content was moved to an independent site hosted by DTU, upon request from the Project Officer. The URL remains unchanged.

### **Co-ordination activities**

The scientific representative of DTU (Merete Badger) has undertaken the following tasks:

- Set up and maintained a MS SharePoint site for use within the project. The site is used for sharing and storage of working documents, meeting agendas and minutes, and deliverables. Milestones, deliverables and meetings are displayed in a list or calendar format and announcements are posted on the front page of the team site.
- Organised project meetings on a regular basis, including the project kick-off and mid-term meetings. For each meeting, agendas and minutes have been written and distributed via the team site.
- Reviewed upcoming milestones and deliverables in a continuous manner (in connection with project meetings) and discussed the actions required to meet the deadlines with responsible partners.
- Followed up in situations where a milestone or deliverable got delayed e.g. through e-mail reminders and telephone calls to the responsible partners and notification of the Project Officer.
- Reviewed all deliverable reports before submission.
- Kept in close contact with the Project Officer. This has involved a trip to Brussels on June 27, 2012 where the project status was discussed and a list of action points was created. A telephone conversation took place on August 20, 2012 where the action points were followed-up.

- Monitored the work in other related projects (Explore VC, Select CD) and research alliances (SEEIT, KIC InnoEnergy) in order to identify synergies with VCH.

### **Communication between beneficiaries**

In addition to the project meetings listed above, frequent communication has taken place between all of the beneficiaries via e-mails and telephone conversations. This communication has primarily been handled by the four WP leaders, who have established a very strong collaboration team. Information and tasks are distributed efficiently from the WP leaders to the other members of the project team. In connection with WP5 tasks, communication has taken place directly between technicians at the partners and staff at TU/e. In connection with the financial part of this periodic report, financial controllers at DTU have been in direct contact with financial staff at the partners.

### **Possible co-operation with other projects/programmes etc.**

Synergies have been identified with the following research projects so far:

#### *Explore Energy network and project Explore Virtual Campus (Explore VC)*

Community-building between students, research institutes, and SME's dealing with renewable energy has been initiated under the Explore Energy initiative (see <http://www.exploreenergy.eu/>). VCH will use and strengthen the Explore Energy community. The 'virtual incubator' developed in project Explore VC (under Explore Energy) is one example of how links between students, research institutes, and SME's can be created. In VCH we are thinking of alternative ways to engage these parties, inspired by the real incubator I3P at Polito and user requirement analyses (see *D4.1 Interim E-link evaluation report*). Our work in connection with virtual incubator processes will build upon the work carried out in Explore VC. Some of the other functionalities developed under Explore VC (the virtual lecture room, poster sessions, and coffee house) will be re-used in VCH for knowledge sharing and socializing/community building.

#### *Select CD:*

In Select CD a community of students – mainly at the master level – has evolved around the common interest in renewable energy. VCH can use and strengthen this community e.g. by offering the online courses and test facilities developed in the project to Select CD master students.

Two project members from DTU act as chair persons for quality management groups of Explore VC and Select CD, respectively. This gives insight in the two projects. Project meetings of VCH, Explore VC and Select CD were held in sequence both in October 2011 and September 2012. Some VCH participants are directly involved in the other projects.

The core activity of VCH is to develop a technical concept for a hub, or infrastructure, which can connect the partners (and potentially other institutions) at the international level. This aspect has not been addressed in any of the previous projects mentioned above. From a technical point of view, the link between Explore VC and Select CD on the one hand and VCH on the other is shown in Figure 1. Whereas Explore VC and Select CD focus on providing and piloting end user functionalities like the virtual conference room, the virtual incubator and the virtual coffee house, VCH focuses on the infrastructure and presentation facilities that make it possible to “glue” the functionalities together in a coherent whole that can be used seamlessly across borders, be it institutes or countries.

Additional synergies exist between VCH and other networking initiatives in the field of renewable energy, most importantly student mobility programs such as the [Select Master Program](#), [Select+ PhD. Program](#), [KIC InnoEnergy Master and PhD Programs](#), [European Wind Energy Master](#), and [Nordic Master in Innovative Sustainable Energy Engineering](#). Students from the mobility programs are expected to benefit directly from the functionalities and the infrastructure of VCH, especially in the case of Select Master Program which has been chosen as a test case for the project. Access to learning materials online means that the travelling from university to university can be reduced. From a university perspective, some of the administration e.g. associated with guest accounts for mobility students will be reduced when students can access learning material with the identity from their local university.

Finally, synergies exist between VCH and the strategic energy alliances [SEEIT](#) and [KIC InnoEnergy](#). Two members of the VCH project hold positions in these alliances and this will ensure that ideas and success stories from VCH will be fed directly into the alliances and to the [European Strategic Energy Technology \(SET\) plan](#).

## Deliverables and milestones tables

### Deliverables

TABLE 1. DELIVERABLES										
Del. no.	Deliverable name	Version	WP no.	Lead beneficiary	Nature	Dissemination level <sup>1</sup>	Delivery date from Annex I (proj month)	Actual / Forecast delivery date Dd/mm/yyyy	Status No submitted/ Submitted	Comments
D1.1	Mid-term report		1	1	R	PU	11	26/11/2012	Submitted	Delivery date changed to 26/11/2012 in

<sup>1</sup> **PU** = Public

**PP** = Restricted to other programme participants (including the Commission Services).

**RE** = Restricted to a group specified by the consortium (including the Commission Services).

**CO** = Confidential, only for members of the consortium (including the Commission Services).

**Make sure that you are using the correct following label when your project has classified deliverables.**

**EU restricted** = Classified with the mention of the classification level restricted "EU Restricted"

**EU confidential** = Classified with the mention of the classification level confidential " EU Confidential "

**EU secret** = Classified with the mention of the classification level secret "EU Secret "

										agreement with the PO
D2.1	Interim report on pedagogical improvement		2	2	R	PP	12	30/09/2012	Submitted	
D3.1	Prototype implementation of e-Learning tools and incubator processes		3	4	P	PP	12	30/10/2012	Submitted	
D4.1	Interim e-Link evaluation report		4	3	R	PP	12	19/11/2012	Submitted	
D5.1	Preliminary technology survey report		5	4	R	PP	3	27/03/2012	Submitted	
D5.2	Technical concept and recommendations for the specifications of the VC Hub inventory and demonstrator		5	4	R	PP	6	27/03/2012	Submitted	
D6.1	Dissemination strategy paper - preliminary version		6	1	R	PU	6	30/03/2012	Submitted	
D6.2	D6.2 Virtual Campus Hub website		6	1	O	PU	3	27/03/2012	Submitted	

## Milestones

TABLE 2. MILESTONES							
Milestone no.	Milestone name	Work package no	Lead beneficiary	Delivery date from Annex I dd/mm/yyyy	Achieved Yes/No	Actual / Forecast achievement date dd/mm/yyyy	Comments
MS1	Kick-off meeting	1	1	1	Yes	24/10/2011	Minutes are available at VCH team site
MS2	VCH website publicly available	6	1	3	Yes	26/01/2012	Moved to independent site in 08/2012
MS3	Selection of test cases complete - three examples of elements for joint educational and training programs	3	1	4	Yes	30/04/2012	Survey document is available at VCH team site
MS4	Survey of available technology published to partners	5	4	4	Yes	27/03/2012	Reported in D5.1
MS5	Dissemination strategy published - initial version	6	1	6	Yes	30/03/2012	Publicly available at VCH web site

MS6	Analysis of existing virtual material for decision makers on energy issues - preliminary report circulated among partners	4	3	6	Yes	26/09/2012	Presentation during mid-term meeting in Torino. Included in deliverable 4.1 (section 2)
MS7	Analysis of requirements and functional analysis of the necessary new functions inside VCH - preliminary report circulated among partners	4	3	6	Yes	26/09/2012	Presentation during mid-term meeting in Torino. Included in deliverable 4.1 (section 3)
MS8	Technical concept with specifications accepted and agreed by partners	5	4	7	Yes	27/03/2012	Reported in D5.2
MS9	Functional and architectural specification for e-Link available	4	3	12	Yes	19/11/2012	Included in deliverable 4.1 (section 4)
MS10	Technical equipment installed and tested at pilot sites - ready to begin testing and evaluation of course material	5	4	12	Yes	30/09/2012	Testing of learning material has started at KTH and DTU
MS11	Mid-term project meeting - output and minutes to be available for 1st project review	1	1	12	Yes	26-27/09/2012	Minutes are available at VCH team site



## Virtual Campus Hub (VCH)

### Mid-term meeting September 26-27, 2012 in Torino, Italy

**Wednesday, September 26 at 10:00-17:00**

#### Attendees

*Merete Badger (DTU), Torsten Fransson (KTH), Lucio Monaco (KTH), Thomas Nordgreen (KTH), Nora Espahbodi (KTH), Viktoria Martin (KTH), Laura Farinetti (Polito), Fulvio Corno (Polito), Giovanni Fracastoro (Polito), Frank Vercoulen (TU/e), Enrico Ghia (I3P)*

Note that links in this document refer to the project team site and will only work if you are logged in.

#### 9:30-10:00

Welcome coffee

Merete Badger gave a quick overview of the project VCH and its different elements (functionalities, infrastructure, and presentation in a portal).

#### 10:00-11:00

Status of the work and connections towards the Virtual Campus Hub

- e-Learning tools (WP2)

Lucio Monaco presented the status of WP2. The remote cascade lab, the remote pressure measurement lab, and the examination tools are fully developed and internal testing has started. See [D2.1](#) for a detailed description of the e-Learning tools.

The question of how to attract students to our courses (like the US Coursera system can) was discussed. In the future it would be good to connect all services from e.g. Explore Energy VC, Select CD, and VCH in one place or portal. For now they will be kept separate to clearly show the outcome of each individual project. A common portal could work as a broker and teachers could, with some help, contribute with their learning material.

- e-Learning programs and courses (WP3)

Merete Badger demonstrated the course environment of the WAsP course, which is now fully developed and open for the partners (visit the team site for [login information](#)). The course is developed for industry but DTU is currently investigating how it can be included in master courses with ETCS credits.

- e-Linked innovation (WP4)

Giovanni Fracastoro presented results of a survey related to MS6 where all partners have contributed with information about existing virtual material for decision makers on energy issues. This knowledge will be included in the design of e-Linked innovation tools. The work in WP4 is currently in the analysis phase but rapid progress to the design phase is important.

- Virtual Campus Hub technology (WP5)

Frank Vercoulen presented the technical concept of the Virtual Campus Hub. The concept is also described in the [D5.1](#) report, which will be updated continuously as the work progresses.

## 11:00-12:00

Plan for testing of the VCH elements and the technology

- e-Learning tools (WP2)
- e-Learning programs and courses (WP3)
- Virtual Campus Hub technology (WP5)

A plan was setup for testing of the different VCH functionalities as part of WP3 (lead DTU). There will be three test phases: 1) internal testing, 2) external testing where the partners are invited to try each other's learning material and industry will be involved, 3) testing within the VCH environment. An [outline of WP3](#) is available, which describes how DTU interprets the deliverables of this WP and what the contribution of each partner to WP3 should be.

*Plan for the testing of VCH functionalities in WP3.*

VCH functionality	Partner	2012					2013									
		Aug 11	Sep 12	Oct 13	Nov 14	Dec 15	Jan 16	Feb 17	Mar 18	Apr 19	May 20	Jun 21	Jul 22	Aug 23	Sep 24	Month Prj. month
Remote lab exercises and examination tools	KTH	D3.2														
WAsP wind energy course	DTU						D3.4									
e-Link functionalities	Polito	D3.3														
Online collaboration tool	TU/e															
Development of the VCH technology and portal	TU/e	D3.1														

Internal testing

External testing

Testing in the VCH environment

The list of existing energy programs and courses at the partners ([MS3](#)) will be used to identify relevant courses for the testing and it is up to each partner to invite the other partners to test functionalities.

## 12:00-13:00

Lunch

## 13:00-15:00

e-Linked innovation (WP4)

- Status of the work
- Plan for testing
- Synergies with other projects (e.g. Explore Energy VC and SELECT VC)
- 

Enrico Ghia (I3P) presented the real incubator at Polito and it was discussed how some of the incubator functionalities can be made virtual. The development will take the deadlines of I3P's Start CUP (call for proposals) into account and aim for integration with that.

The main focus in VCH will be on the screening/pre-incubation phase where sustainable ideas have to be identified amongst hundreds of proposals. Today we need information – not office space – to generate new businesses. People are the most important resource and proposals have to 'earn' the attention of a human through submission of the correct information.

Polito's real incubator is funded by the region of Piemonte. A new business model is needed before the concept can be up-scaled to the European level. We will first design a concept which can be used locally by I3P and by other partner's incubators.

### **15:00-15:30**

Coffee break

### **15:30-16:30**

Integration of virtual incubator (Explore Energy VC project) with e-Linked innovation (WP4)

- how can we make this happen?

The Virtual Incubator built under Explore Energy VC is more like a contact point for SMEs and experts. The two different approaches to e-Linked innovation (CBS's and Polito's) can easily be combined at a later stage e.g. on the VCH portal.

### **16:30-17:00**

Synergies with other projects (e.g. Explore Energy VC and SELECT CD)

- make a detailed map of the synergies

The following examples of synergies were listed:

- Tools developed under Explore Energy VC (e.g. virtual coffee house, virtual poster session, virtual conference room) can become elements in the Virtual Campus Hub together with new elements.
- Learning materials developed in VCH can be used in different master programs e.g. Select Master, Nordic Energy Master, KIC Inno Energy Master.
- Learning materials developed in VCH can be used in the Select+ Ph.D. program
- Incubator work by TU/e can be integrated with the incubator elements of VCH – Frank Vercoulen will find more information about the work of TU/e.
- Remote labs developed in VCH will be used by Thrust students.
- Student tracking tool developed in Explore Energy VC will undergo further development under KIC Inno Energy. It will be a conceptual part of VCH
- The coming Energy Learning Theater at KTH, which builds upon the virtual conference room, is likely to be used by all projects
- Explore Energy VC, Select CD, and VCH are all concerned with the virtual campus idea and how to realize it (in different ways)
- Ideas and learning points of VCH will be brought into the SET plan for education and training

The following aspects distinguish VCH from previous projects:

- Previous projects (e.g. Explore Energy VC and Select CD) have focused on the learning content and the tools needed. In VCH the necessary infrastructure facilities (Géant, eduGAIN, Surfconext) and presentation technologies (OpenSocial portals, gadgets), which will glue together the contents, are taken into account as well. VCH will make learning materials easily accessible. At the moment, every university has its own tools and platforms but there is little integration, especially across borders.

A visual presentation of synergies will be prepared before the EU project review on December 3, 2012 (Merete Badger)

**Dinner**

## **Thursday, September 27 at 9:00-15:00**

### **Attendees**

*Merete Badger (DTU), Torsten Fransson (KTH), Lucio Monaco (KTH), Laura Farinetti (Polito), Enrico Venuto (Polito), Frank Vercoulen (TU/e)*

### **9:00-10:00**

Welcome coffee and preparation for online meeting

Before the mid-term meeting, the joint federations (Surfnet, WAYF, SWAMID, IDEM) had proposed a solution for the connection of the four partners through eduGAIN. The proposal was briefly discussed and a few questions arose, which needed to be clarified by the federations.

### **10:00-11:00**

Online meeting with federations (Surfnet, WAYF, SWAMID, IDEM)

- the joint federations will propose a solution to the VCH use case

The following representatives from the federations attended the meeting: David Simonsen (WAYF), Roland Hedberg (Swamid), Maria Laura Mantovani (IDEM), Gera Pronk (Surfnet), Eefje van der Harst (Surfnet), Joost van Dijk (Surfnet).

The federations have outlined a plan to connect all VCH partners through eduGAIN. The to-do list for this to happen is:

1. All partners have to sign relevant documents to connect their pilot services to their local federation, to opt-in as eduGAIN IdPs and to opt-in their pilot services as eduGAIN services. This can be done in parallel with realizing the technical connections. Frank will find out which paperwork needs to be done by whom.
2. WAYF will join eduGAIN within 3-4 months and PoliTo and IDEM need to make arrangements to connect to each other for this pilot.
3. Members from industry involved in VCH pilots will be accommodated through guest accounts (WAYF orphanage, SURFguest) or through their OpenSocial ID (Swamid).
4. Part of the paperwork involves checking local privacy protection rules that may apply to the VCH pilot environment. To be worked out when more details of the VCH environment are known.

A follow-up meeting with the federations will be organized in the end of November. This enables us to have an update on the status just before the VCH project review in Brussels on December 3.

### **11:00-12:00**

- team discussion of the outcome of online meeting with federations
- status update on connections for DTU (itslearning), KTH (Bilda), Polito, and TU/e (MS Sharepoint)

See notes on the meeting with federations. In addition, Frank will work out a list of all components and connections, their status and who is responsible for which component.

KTH has decided to make a separate Moodle implementation first, before trying to integrate with the central KTH system Bilda. In this way, possible integration problems (e.g. with ID-mapping) can be avoided for this pilot.

## **12:00-13:00**

Lunch

## **13:00-14:00**

EU project review on December 3, 2012

- make an agenda for the day and send to EU project officer

The following agenda is suggested by the project team:

- 9:00-9:30: Meeting between PO and reviewers
- 9:30-10:00 Introduction (DTU)
- What is a Virtual Campus Hub?
  - Status of the project and its deliverables
  - Overall plan for implementation and testing
  - Synergies with other projects, programs, and alliances
- 10:00-10:30 Technical concept of VCH (TU/e and Surfnets)
- 10:30-12:30 VCH functionalities
- Remote laboratory exercises (KTH)
  - Examination tools (KTH)
  - Online course in wind energy (DTU)
  - e-Linked innovation tools (Polito)
  - Collaboration environment (TU/e)
- 12:30-13:00 Dissemination and exploitation strategy (DTU)

## **14:00-15:00**

Dissemination and exploitation of the project and its outcome

- update the preliminary dissemination strategy report

The deliverables of WP6 were reviewed and it was discussed how we can meet them. The following ideas came up:

D6.3 VCH workshops and meetings, due month 21:

- Terena REFEDS workshop, September 5, 2012 (DTU)
- Terena VAMP workshop, September 6-7, 2012 (all partners and federations)
- Surfnets Relation Days, October 4, 2012 (TU/e)
- SEEIT workshop, October 25, 2012 (DTU)
- Internal seminar at DTU where the WAsP course will be presented to stakeholders in connection with DTU's e-Learning strategy and DTU's renewable energy course planning, December 2012 (DTU)
- Internal seminar at KTH?
- Internal seminar at TU/e?
- Internal seminar at Polito or I3P?
- Presentation of VCH at other conferences in early 2013 e.g. KIC InnoEnergy Young Scientist conference, Select and Thrust Spring Seminar, Select CD showcase (KTH will look out for possibilities)

D6.4 VCH virtual events (6 in total), due month 21– *consider moving this deadline to month 24 such that the events will be using the fully developed VCH environment:*

- Online meeting about the technical concept of VCH (May 20, 2012)
- Online meeting with all partners and all federations (September 27, 2012)
- Laboratory exercises at KTH run with participants from the partners
- WAsP course at DTU run with participants from the partners
- An e-Link event
- ?

D6.5 VCH conference, due month 18 – *consider moving this deadline to month 24 such that it can be connected to the final meeting of VCH or another event where many stakeholders are present:*

It might be a good idea to split the VCH conference so it is targeted towards specific stakeholders at different times (e.g. academic community, alliances (SEEIT, KIC InnoEnergy), industry, decision makers, and federations). VCH could be promoted through side-events connected to larger events in which these stakeholders participate.

D6.6 Strategy paper, due month 24:

Our main strategy is to demonstrate the concept of linking functionalities together in a Virtual Campus Hub with a portal for easy access. Some of the functionalities will be developed and tested whereas others will remain conceptual. Detailed descriptions of the concept and our experiences from using it represent the main outcome of the project. At present, we do not expect the Virtual Campus Hub demo to continue beyond the project period. The different VCH functionalities, in contrast, are designed for longer-term use by the partners and for integration in educational programs. Strategies for exploitation of these functionalities will be included in the paper.

D6.7 Final report on the VCH concept, due month 24:

To be discussed later.

Merete Badger, October 2012